

Commonwealth of Kentucky

Division for Air Quality

PERMIT STATEMENT OF BASIS

FEDERALLY ENFORCEABLE CONDITIONAL MAJOR DRAFT PERMIT

No. F-04-034

BP PRODUCTS (NORTH AMERICA) INC. – BROMLEY PIPELINE FACILITY

BROMLEY, KY

MARCH 16, 2005

JOSHUA J. HIGGINS, REVIEWER

SOURCE I.D. #: 21-117-00016

SOURCE A.I. #: 2446

ACTIVITY #: APE20040002

SOURCE DESCRIPTION:

The Bromley Pipeline Facility operates a barge loading and transfer terminal utilizing a Barge Loading Rack (EP 11) that delivers gasoline and distillate fuel oil no. 2 to marine vessels that operate along the Ohio River. The Barge Loading Rack has a maximum pump rate of 168,000 gallons per hour (gal/hr) for both gasoline and distillate. A vapor recovery unit (VRU) with a control efficiency of 95% will be constructed to control emissions of VOCs and HAPs from the barge loading rack during gasoline loading.

The Bromley Pipeline Facility previously operated a Truck Loading Rack (EP13) that was originally approved for construction in 1988 to load jet “A” kerosene via a “no permit required” letter. In the response to Technical NOD #3 (Phase 1) received 02/28/05 the Bromley Pipeline Facility indicated that this point would cease operations immediately, and be dismantled and removed from the site.

The Bromley Pipeline Facility houses six (6) domed external floating roof tanks, EP 01 (9010), EP 02 (9020), EP 03 (9030), EP 06 (9060), EP 07 (9070), and EP 08 (9080); two (2) internal floating roof tanks, EP 09 (9110) and EP 10 (9120); and two (2) vertical fixed roof tanks, EP 04 (9040) and EP 05 (9050).

The Bromley Pipeline Facility previously operated under Title V permit V-97-012. During the renewal period for the Title V permit, the facility submitted a Conditional Major application to increase throughput to the limits specified below and add the VRU. Therefore, the permit is being issued under 401 KAR 52:030, Federally-enforceable permits for nonmajor sources.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.

APPLICATION COMMENTS:

FESOP, Log # 54532 / 56261

COMMENTS:Background Information:

The Bromley Station had previously been operating under an initial Title V permit, V-97-012. The permit contained gasoline and distillate fuel operating limitations to preclude the applicability of 40 CFR 63, Subpart Y, *National Emission Standards for Marine Tank Vessel Loading Operations*. The permit renewal application was submitted on March 22, 2002 (Log # 54532). The permittee submitted another application for new construction on January 15, 2004 (Log # 56261). In this application, the permittee requested new operating and emission limitations that would authorize the permittee to emit VOC's and HAP's below major source thresholds for Title V and New Source Review. Thus, the permittee will continue to be precluded from the requirements in 40 CFR 63, Subpart Y, and the resultant permit will be processed as a Federally-enforceable permit for nonmajor sources.

Type of control and efficiency:

Type: Vapor Recovery Unit (VRU)

Model: HAM/Z-2500-825-8-8-5

Manufacturer: John Zink

Description: Two granular activated carbon beds with vacuum regeneration.

Date constructed: 2004 (Anticipated)

A vapor recovery unit (VRU) with a control efficiency of 95% will be constructed and used to control emissions of volatile organic compounds (VOC) from the barge loading rack during gasoline loading. The annual gasoline throughput limit at the marine vessel loading dock was previously 55,000,000 gallons per year based on a 12 month rolling total. The new limit is 411,600,000 gallons per year based on a twelve (12) month rolling total, with 95% VOC emissions control. An emissions comparison is in the table below.

Permit	Gasoline Throughput (1,000 gal/yr)	Source-wide Uncontrolled Potential Annual Emissions (TPY)	Source-wide Controlled Potential Annual Emissions (TPY) Based on Control Efficiency = 95%
V-97-012	55,000	179.7*	N/A
F-04-034	411,600	717.7	52.9

*From initial Title V permit Statement of Basis.

Emission factors and their source:

The emissions for all the storage vessels are based on U.S. EPA's TANKS 4.0 program.

To determine the emissions associated with the barge loading operations, the most current version of the U.S. EPA's AP-42 emission factors were used (Table 5.2-6 and 5.2-3 for distillate and gasoline, respectively). For 11 (11) Distillate Fuel Oil Barge Loading, the emission factor is 0.012 pounds of VOC's per 1,000 gallons of distillate fuel oil loaded, and for 11 (12) Gasoline Barge Loading, the emission factor is 3.4 pounds of VOC's per 1,000 gallons of gasoline loaded. To calculate HAP emissions, the VOC emission factor is multiplied by the vapor weight percent of each HAP vapor present that is displaced from the marine vessel during distillate fuel oil or gasoline loading. The HAP vapor weight percents are obtained from "Storage Vessel Liquid HAP Concentration Data" provided in an American Petroleum Institute document contained in the application.

Applicable regulations:

401 KAR 59:050, *New Storage Vessels for Petroleum Liquids*, applies to petroleum liquid storage vessels that have storage capacities less than 40,000 gallons and for which construction commenced on or after April 9, 1972 and prior to July 24, 1984, and which are located in a either (a) a county which is designated ozone nonattainment or (b) in any other county if it is part of a major source of VOC.

401 KAR 61:050, *Existing Storage Vessels for Petroleum Liquids*, applies to petroleum liquid storage vessels that have storage capacities greater than 580 gallons, were constructed prior to April 9, 1972, and which are located in a county which is designated ozone nonattainment for any nonattainment classification except marginal.

401 KAR 63:002, incorporating by reference 40 CFR 63, Subpart Y, *National Emission Standards for Marine Tank Vessel Loading Operations*, applies to both Distillate and Gasoline Barge Loading operations. The only applicable requirements are the emission estimation procedures of 40 CFR 63.565(l) and the recordkeeping requirements of 40 CFR 63.567(j)(4).

401 KAR 63:020, *Potentially hazardous matter or toxic substances*, applies to each process unit which emits or may emit potentially hazardous matter or toxic substances.

Anything unusual about the:

1. VRU Requirements. Even though the only directly applicable requirements from 40 CFR 63, Subpart Y are for emission estimates and recordkeeping, additional requirements from the rule were used in the permit for barge vapor tightness Operating Limitations, Testing Requirements, Recordkeeping Requirements, and Specific Control Equipment Operating Conditions. These requirements are deemed necessary due to the fact that proper performance and operation of the VRU is the key to ensuring compliance with the source-wide emission limits and the source's Conditional Major status. Since they are not directly applicable, references to these provisions are not listed in the permit after the permit requirements. However, for the sake of cross-referencing, the permit requirements and the corresponding rule requirements are listed in the table below.

Barge Loading Permit Requirement	40 CFR 63, Subpart Y Requirement
1.c.	63.562(b)(1)(i)
1.d.	63.562(b)(1)(ii)
1.e.	63.562(b)(1)(iii)
1.f.	63.563(a)(1)(i)
Compliance Demonstration Method e(1) – (4)	63.563(a)(4)(i) – (iv)
3.b. – 3.h.	63.565(d)(2) – (9)
3.i.	63.563(b)(6)
3.j.	63.564(g)(2)
3.k.	63.565(c)(1)
3.l.	63.565(c)(2)
5.e. – 5.h.	63.564(g)(2)
5.j.	63.567(i)
7.c.	63.563(b)(6)(i)
7.d.	63.565(h)(2)
7.e.	63.563(b)(6)(ii)(B)
7.f.	63.565(i)
7.g.	63.563(b)(6)(ii)(B)
7.h.	63.564(g)(2)

2. Non-applicable Regulations.

401 KAR 59:101, *New bulk gasoline plants*, and 401 KAR 61:056, *Existing bulk gasoline plants* do not apply to the facility because with removal of the Truck Loading Rack the facility does not meet the definition of “bulk gasoline plant.”

401 KAR 60:005, incorporating by reference 40 CFR 60.110 to 60.113 (Subpart K), “*Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978*”, does not apply to any of the tanks since all the tanks greater than 65,000 gallons were constructed before 06/11/73, and all tanks constructed after 06/11/73 are less than 40,000 gallons.

401 KAR 60:005, incorporating by reference 40 CFR 60.110a to 60.115a (Subpart Ka), “*Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984*”, does not apply to any of the tanks since all the tanks greater than 40,000 gallons were constructed before 05/18/78, and all tanks within the applicability dates are less than 40,000 gallons.

401 KAR 60:005, incorporating by reference 40 CFR 60.110b to 60.117b (Subpart Kb), “*Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984*”, does not apply to any of the tanks since all the tanks were built before 07/23/84.

401 KAR 60:005, incorporating by reference 40 CFR 60.500 to 60.506 (Subpart XX), “*Standards of Performance for Bulk Gasoline Terminals*”, does not apply to the facility because as a result of removal of the Truck Loading Rack the facility does not load tank trucks.

401 KAR 63:002, incorporating by reference 40 CFR 63.420 to 63.429 (Subpart R), “*National Emission Standards for Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations)*”, does not apply because the facility demonstrated that it is not HAP-major pursuant to 40 CFR 63.420(a)(3).

3. Tank Requirements. Even though 40 CFR Part 60 performance standards for petroleum liquid storage vessels don’t directly apply, Testing, Recordkeeping, and Reporting requirements from Subpart Ka, were listed in the permit for the external floating roof tanks. The requirements for inspecting the condition of the primary and secondary seals were deemed necessary to ensure compliance with the source-wide emission limitations and the source’s Conditional Major status. Since they are not directly applicable, references to these regulations are not listed in the permit after the permit requirements. However, for the sake of cross-referencing, the permit requirements and the corresponding rule requirements are listed in the table below.

Ext. Floating Roof Tank Permit Requirement	40 CFR 60, Subpart Ka Requirement
3.a.(1)-(3)	60.113a(a)(1)(i)(A)-(C)
3.b.(1)-(2)	60.113a(a)(1)(ii)(A)-(B)
3.c.	60.113a(a)(1)(ii)(C)
3.d.	60.113a(a)(1)(iii)
5.b.	60.113a(a)(1)(i)(D)
6.a.	60.113a(a)(1)(i)(E)
6.b.	60.113a(a)(1)(iv)

4. Tank Modification Determination. During a December 8, 2004 site visit, placards were discovered on external floating roof tanks 9010, 9020, 9070, and 9080 indicating that these tanks had been altered or repaired to meet API specification 650 and/or 653 between 1996 and 2003. The source was instructed to determine if the tanks had been “modified” or “reconstructed” pursuant to 40 CFR 60.14 and 60.15, respectively, and to submit additional information proving whether or not the tanks have been modified or reconstructed. On January 5, 2005, the source submitted additional information indicating that none of the tank repairs increased the amount of air pollutants or resulted in emission of any pollutant not previously emitted. Therefore, the repairs are not considered to be “modifications” with respect to the NSPS definition found in 40 CFR 60.14. This same submittal indicated that “reconstruction,” as defined in 40 CFR 60.15, did not take place either. This determination is based on the actual repair costs specified in the additional information and replacement cost estimates provided by the source. Since the total cost of repairs for each tank was well below 50 percent of the estimated fixed capital cost of a comparable new tank, the alterations do not constitute “reconstruction.” As a result, all regulation applicability determinations were based on the original construction dates, and the original construction dates of 1939, 1940, 1952, and 1944 are listed in the permit.

EMISSION AND OPERATING CAPS DESCRIPTION:

The Bromley Pipeline Facility has requested voluntary limits to preclude the applicability of the RACT standards provided in 40 CFR 63, Subpart Y, *National Emission Standards for Marine Tank Vessel Loading Operations*, by limiting gasoline loading through the Barge Loading Rack to no greater than 411,600,000 gallons per year, which is equivalent to 9,800,000 barrels per year (i.e.: less than 10,000,000 barrels).

The Bromley Pipeline Facility has requested a voluntary limit of 85,000,000 gallons per year (2,023,809 barrels per year) on distillate loading through the Barge Loading Rack.

The Bromley Pipeline Facility has requested voluntary limits to preclude the applicability of the MACT emission standards provided in 40 CFR 63, Subpart Y, *National Emission Standards for Marine Tank Vessel Loading Operations*, by limiting maximum HAP emissions from the facility to less than 9 TPY of any individual HAP and less than 22.5 TPY of combined HAP’s by utilizing the VRU to reduce HAP emissions from gasoline loading. The only requirements from the subpart are the emission estimation and recordkeeping requirements specified in 40 CFR 63.560(a)(3).

The Bromley Pipeline Facility has requested voluntary limits to preclude the applicability of 401 KAR 51:052, *Review of new sources in or impacting in non-attainment areas*, by utilizing the VRU to reduce VOC emissions when gasoline is loaded through the barge loading rack. The VRU will have a control efficiency of at least 95%. Through addition and use of the VRU there will actually be an emissions decrease in VOC’s from the initial Title V to this permit.

Pursuant to 401 KAR 63:020, no owner or operator shall allow any affected facility to emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants. The modeling in Appendix A indicates that compliance with the source-wide VOC and HAP limits also demonstrates compliance with the air toxics rule.

Prior to the compliance demonstration of the vapor recovery unit, the total annual throughput of gasoline loaded through the Barge Loading Rack shall not exceed 42,380,000 gallons per year based on a twelve (12) month rolling total. This will insure that source-wide VOC emissions remain at or below 90 tpy.

PERIODIC MONITORING:

See the permit for Specific Monitoring Requirements, by group.

OPERATIONAL FLEXIBILITY:

None.

APPENDIX A

SCREEN3 AND ISCST3 MODELING FOR AIR TOXICS
COMPLIANCE

Appendix A

SCREEN3 and ISCST3 Modeling for Air Toxics Compliance Procedural Summary

- Modeled results are converted to an annual concentration and compared to the U.S. EPA's Reference Concentration (RfC) listed in the Integrated Risk Information System (IRIS) database. All modeled scenarios produce annual concentrations less than the RfC (See the modeling spreadsheets on the following pages).
- Since the IRIS RfC is "An estimate ... of a continuous inhalation exposure to the human population ... that is likely to be without an appreciable risk of deleterious effects during a lifetime," and SCREEN3 provides hourly concentrations for Simple Terrain (ST) and 24-hour concentrations for Complex Terrain (CT), the SCREEN3 results were converted to an annual factor. For ST the annual conversion factor is 0.08, and for CT the annual conversion factor is 0.15.
- Initially, SCREEN3 was the only model intended for use, but ISCST3 was used to verify the CT modeling scenario. As can be seen from the modeling result spreadsheet, the SCREEN3 generated CT concentration is less than the concentrations generated by SCREEN3 for both ST and ST with terrain elevations above the stack base. These results were contrary to what was expected (i.e.: CT was expected to produce the highest concentration), so ISCST3, with its ability to use actual weather and terrain data, was used to verify the concentrations. ISCST3 provides annual concentration results, so no annual conversion was necessary.
- Only emissions from the VRU and from External Floating Roof Tank (EFRT) Roof Landing Events (RLE's) were modeled. The VRU was selected for modeling because it accounts for 66% of source-wide emissions and is the only source located in the river valley. RLE's on the EFRT's were also selected for modeling because a typical RLE is estimated to last only 24 hours and only 4 events occur all year. Since the RLE duration is short, but emissions fairly high (RLE's potentially account for 15% of source-wide emissions), it seemed logical that high concentrations could result from this process. Modeling of other sources was not conducted because they were assumed to not significantly impact the results due to their low emission rates and locations on a hilltop.
- SCREEN3 modeling was executed by entering the VRU stack data provided in the application, but a generic emission rate of 1g/s was used. The resultant concentration was multiplied by either the PTE or the emission limit (converted to g/s) of each compound from the source to provide a modeled concentration specific for each compound. This value was then converted to an annual concentration as addressed above.
- For the ISCST3 modeling of the VRU, the VRU stack data provided in the application was entered along with the exact g/s emission rate of Hexane. Simple ratios were established with the Hexane emission rate, Hexane concentration, and other compound emission rates to determine the other compound concentrations.
- For the ISCST3 modeling of the RLE's, tank data provided in the application was entered, but a

generic emission rate of 1 g/sm^2 was used. The resultant concentration was multiplied by the PTE (converted to g/sm^2 taking into account the area of the tank roof) of each compound from the source to provide a modeled concentration specific for each compound

APPENDIX B

SCREEN3 AND ISCST3 MODELING OUTPUT